PSYCHIC TRANSMISSION OF INFORMATION: FACT OR FANCY

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ABSTRACT

A review of the definitions and types of Psychic Transmissions is presented, along with some of the locations where such investigations are being carried on. Two specific investigations carried out at the PSI Communications Project at the New Jersey Institute of Technology are summarized, along with a discussion on the theory underlying such transmissions.

INTRODUCTION

In recent months there have been two different reports in the press, linking the brain with computers. In the most recent brain-computer link press release, it was reported that through the use of properly implanted electrodes, computers can become "an aid to thought" that will amplify thinking by increasing "thinking speed and accuracy", as well as making large libraries of information available to the brain. In an earlier press release, it was reported that through the use of electrodes, the computer could recognize the brain wave patterns generated by various command statements or words, when these words were "said to ones self", and act on these command patterns.

Note that the information transmission link between the brain and the computer involved the electrode placed on the persons head. With today's sophisticated electronics, brain waves have been recorded by instruments at some distance (at least 30 centimeters) away from the head.[1,2] With not too much stretch of the imagination, this distance could be lengthened from centimeters, to meters, to kilometers. Impossible? Maybe not so impossible, since signals are sent today by something called radio and television transmitters, a feat which was unbelievable many decades ago.

A transmission of information between the brain and/or the mind, and another brain or mind, or an object, is what reportedly takes place in Psychic Transmissions, commonly called Extra-Sensory Perception (ESP). A commonly accepted definition of ESP is that it is an ability to perceive information through other than the normal sensory means - sight, sound, feel, touch, taste. ESP is further broken down into the areas of Telepathy - mind to mind communication, Clairvoyance - mind to matter communication, and Precognition - mind to the future communication.

PSYCHIC INFORMATION TRANSMISSION INVESTIGATIONS

Serious investigation into psychic information transmission has been underway for over a century in both the eastern and western hemispheres. In recent decades the interest has been heightened by (a) the increase in interest in the area by physical scientists, (as opposed to the life scientists), (b) the development of more sophisticated instruments, and (c) the development of better means of communications between the researchers. Work is currently underway in such diverse places as Japan, India, Israel, USSR, CSR, West Germany, Great Britain, Iceland, Canada, the United States, and Brazil. These countries, and more, are represented at international conferences on Parapsychology, Psychotronics, and other related subjects. In the United States reports of such research are even being accepted for publication by the major engineering societies - Institute of Electrical and Electronic Engineers (IEEE), and the American Society of Mechanical Engineers (ASME). The Journal of Paraphysics published by The Parapsychical Laboratory of Downton, Wiltshire, England regularly published reports of work done in many of the countries mentioned. In 1974 the IEEE sponsored a Feature Session at its International Convention and Exposition titled "New Advances in Parapsychology" which had papers dealing with bio-fields, telepathy channels, and precognition.[3] More recently, the IEEE published the telepathy research report of Puthoff and Targ.[4]

Work has been done not only on the Psychic Transmission between humans, and between humans and objects, but also between plants, and animals. Noteable in this area has been the work of Backster in the U.S.A.[5] For a review of some of the research work in psychic transmission of information, the reader is referred to the following English language works, all of which are not too technical, so as not to retard interest and readability.

Wolstenholme, G.E.W. and Millar, E.C.P. (Eds), Ciba Foundation Symposium on Extrasensory Perception, Little, Brown and Company, Boston, Mass., U.S.A., 1956.

Ostrander, S. and Schroeder, L., Psychic Discoveries Behind the Iron Curtain, Prentice-Hall, Englewood Cliffs, N.J., U.S.A., 1970.

TWO SPECIFIC INVESTIGATIONS

So far, this paper has spoken in generalities about research in Psychic Transmission. The author, along with his colleague E. Douglas Dean, has been involved with two investigations into such transmissions, as part of a research project at the New Jersey Institute of Technology, (NJIT), called the PSI Communications Project. This research project was established at the Newark College of

Engineering (now the New Jersey Institute of Technology) in 1962 to investigate certain aspects of psychic transmission or Bio-communication.

To date, two approaches have been worked on and look promising. Both approaches are based on the classical stimulus -- response principle. Both approaches also require two people to communicate -- the stimulator and the respondent. The two approaches use readily available medical and physiological instrumentation to measure the amount of response taking place. It is the indication and amount of the response that is decoded into the message being sent.

SYSTEM A

In the first approach, call it System A, the stimulator and the respondent are conscious. The stimulus takes the form of the stimulator doing mental arithmetic, or looking at names written on cards, or looking at nonsense syllables written on cards. The coincident response, given by the stimulated person who is miles away, and without physical contact with the stimulator, is in the form of a change in the pattern of tracings showing the change in blood circulation as measured by the change taking place in the volume of the extremities -- in this case, the finger.

BASIS FOR SYSTEM A System A is an attempt to develop an observation of S. Figar of Czechoslovakia, made in 1958.[6] It is a form of direct communication measured by a plethysmograph (from plethora -- fullness of blood in the circulation). Plethysmography is a well-known method which has been used for more than a hundred years in human physiology and psychology. It is an instrument that provides and objective record of later study and analysis. The method is based on measuring the change in volume correlated with changes in blood circulation of the extremities of the body[7,8], or in the whole body.[9] Diminution in volume is generally interpreted as vaso-constriction and increase as vaso-dilation. The vascular reaction, based on the autonomic reaction is not, under normal conditions, subject to voluntary control. Figar used a hand plethysmograph where the subject placed his hand in a rubber glove, enclosed by a temperature controlled water bath. Above the water, the airtight container was connected by a tube to a rubber diaphram operating a light stylus on chart paper moving at 1.5 m.m. per second. When the heart pumped, the pen moved up and when the heart rested, the pen moved down, tracing out a pulsed waveform baseline of approximately 70 pulses per minute.

It has been shown [10,11], that, when a person does a short period of mental arithmetic, a vasoconstriction occurs, i.e., a reduction in volume of the hand. This appears as a large rapid deflection of the baseline downwards on the chart in Figar's method[12] of measuring direct volume changes. According to this method, a card with instructions on what numbers to multiply was placed before the subject. As soon as he began multiplying the vasoconstriction occurred. The pen slowly returned to the baseline some while after the subject gave the answer. Figar allowed five minutes for the vascular reaction to subside before deciding to give a second stimulus.

In the original work, Figar noticed a curious phenomenon with several subjects. As soon as he thought of picking up the card on which were written instructions about the mental arithmetic but before actually doing it, his thought was followed by a rapid vasoconstriction in his subject's hand. It seemed as if there was some kind of communication between Figar's thoughts, or emotions dependent on his thoughts, and his subject's vasoconstrictions. He went to the trouble of designing and executing an experiment to measure simultaneous vasoconstrictions in two persons, one of whom (the stimulator) performed mental arithmetic and the other (the respondent) did not know when the stimulator did so. He used two mechanical apparatuses, deliberately rejecting electric or electronic ones to exclude any possibility of reciprocal electrical or magnetic influence. Via the tubes and diaphrams, both the stimulator and the respondent gave a systolic-diastolic wave-form on the same chart paper.

The questions raised by Figar's work were whether all sensory and subliminal stimulation were eliminated so that one could say that the plethysmograph vasoconstriction was a response to a mental stimulus from another person.

THE METHOD USED AT N.J.I.T. Figar's mechanical apparatus was suseptible to a breakdown of the thin rubber diaphram during an experiment, and difficulties with the pen writing equipment. Therefore, it was abandoned in favor of electronic equipment. A finger plethysmograph is made by the Decker Corporation of Philadelphia. It is the Decker Cardiodynameter 307-1 sensing unit and meter unit, the output signals of which feed a Massa 2-channel Meterite Model BSA-250 rectilinear electric writing recorder.

The finger plethysmograph is just as good as the hand plethysmograph. It will work on any finger, thumb, or even the toes. A plastic cup fits over the finger on the fleshy part between the first and second knuckle. Different sizes are available to make the fit tight enough to prevent leakage, but not too tight to affect the circulation. A plastic tube 11 m.m. outside diameter, 8 m.m. inside diameter, and 40 cm. long joined the cup to the transducer unit. This was placed in the next room with the tube passed through a small hole in the solid wall. Transmission of pulse volume changes along 3 meters was found possible using 3 m.m. I.D. flattened plastic tube and metallic step down connectors. The transducer unit's circuit is based on a design by K.S. Lion.[13] In it a pressure capacitance diaphram pickup along with the T-42 ionization transducer tube convert minute volume pulsations into large analogous electrical signals of the order of volts. Thus large amplification with its resultant noise is not necessary for obtaining a continuous record of the volume changes of the finger. The vasocontriction shows as a large signal or direct current baseline shift of the pulsed waveform.

Only one such electronic apparatus was used attached to the subject who lay on a bed, with his finger on the level of his heart. Mental arithmetic was eliminated as the stimulant, as it was never possible to be sure that the stimulator did the mental arithmetic, as requested.

In experiments performed at N.J.I.T. the stimulator wrote the names of five people of recent emotional relationship to him. So did the respondent. Neither one knew the other's choice. To these ten cards with names on them were added five cards which had on them names taken at random from the telephone book, and five blank cards. The telephone names and the blank cards were to serve as controls.

The respondent is then placed on a bed, attached to the plethysmograph, and locked in a laboratory room. The stimulator takes the twenty cards and goes off into another room, in another building, an eighth of a mile away. There is no physical connection between the two people, or between the two buildings.

The stimulator then randomizes the sequence of the cards that are to be used as stimulii. He also randomizes the time intervals between the stimulus periods. In this way, the respondent has no way of knowing when the experiment begins or ends, or when the stimulus -- positive or negative -- is being applied.

At the appointed stimulus time, the stimulator picks up a card, and concentrates on what is written on it. If the stimulus is a name known to the respondent or the stimulator, the respondent will produce a change in the wave pattern that is being measured by the plethysmograph and recorded by the rectilinear pen recorder. However, if the stimulus is in the form of a name unknown to either the stimulator or the respondent, there will be no change from the baseline pattern being produced.

The change in pattern, indicating a mental stiulus, takes the form of a major dip from the baseline shown in the chart. Three measurements are made to measure the occurrence of the dip. First, the vertical rectilinear baseline shift of the vasoconstriction is measured, in m.m., from the bottom of the pulse wave. This is called a Dip. Dips of less than one tenth of the scale are ignored. The second measurement is the horizontal time taken for a Dip to occur, in seconds. The third measurement is the horizontal delay, in seconds, from the time when the stimulus card is picked up, i.e., the start of the stimulus period, to the start of the deflection downwards, called the lag.

The measurements are made on a double blind basis, and only dips occuring during the time periods when the stimulus cards are used are measured.

RESULTS To test them, whether a new form of communication exists, it is necessary to have on average larger deflections occuring during the known name periods, than during the blank card periods, on a statistically reproducible basis. If this phenomenon takes place, this can constitute the basis for a communication system, with the large deflections serving as dots, and the small ones as dashes, as in the Morse Code.

The PSI Communication Project has regularly had pairs of communicators who produced the correct coincident responses at the 0.01 or better probability level. Additional details on the experiments and results can be found in Dean's writings noted in the bibliography.

The System A design, in its engineering essentials, has already been worked out by Taetzsch.[14] The design is based on sequential sampling theory. Information continues to be transmitted until a decision is reached. Redundency is increased in order to increase the reliability.

To transmit a message, the system would switch over from (1) random times to fixed time slots, say every minute, and (2) from random stimulus orders to orders based on the message in some binary code. A name stimulus would be used in the first slot if the message translated called for a dot, or a blank card would be used if the coded message called for a dash. At the receiving end, a large plethysmograph deflection in the first time slot would be decoded as a dot, and a small or no deflection would be decoded as a dash. Each letter of the message could be coded over enough number of slots to achieve the reliability needed to insure the message being received.

The process is slow, but this is the price paid for reliability. It has been estimated that the plethysmograph results are equivalent to about one bit of information per five minutes, with a two-out-of-three reliability. Speeding up may come about by connecting directly into the sympathetic nervous system rather than depending on the ensuing vasoconstriction of the peripheral blood vessels, and the slow return to base level.

SYSTEM B

In the second approach, call it System B, the stimulator is conscious, but the respondent is asleep. In this system, the two communicators are again without physical contact.

The stimulus used in System B is a picture that is suggestive of horizontal or vertical motion, or a blank piece of paper suggestive of no motion at all. The stimulator concentrates on a picture suggestive of horizontal or vertical motion, and hopes to evoke coincident horizontal or vertical rapid eye movements in the respondent, who is asleep and dreaming. If no eye movements are desired, then a blank piece of paper is concentrated on, during the stimulus period.

The equipment used to measure the response, the existence or lack of eye movements (REMs) is the well known medical instrument called the Electroencephalograph (EEG).

By the use of the EEG and the REM technique developed by dream researchers, the times of the four to six dreams per night can be monitored. The time of dreaming is known from the EEG sleep patterns produced by the left and right parietal areas, and the eye electrodes recording the horizontal and vertical eye movements.

Method. In System B, the stimulator and the respondent arrived at the laboratory about bedtime, 9 to 10 p.m. The respondent is fitted with silver disk electrodes on various parts of his head to be used for recording his brain waves, and at his eye canthi to be used for recording his eye movements.

The respondent retires for the night, and the electrode wires are plugged into a junction box above the respondent's bed. Wires from the junction box lead to the EEG located in an adjacent room, and monitored by a member of the experimental team.

The stimulator, on the other hand, goes to a room down the hall and around a corner, about 100 feet removed from the respondent and the EEG monitor.

The EEG then shows the respondent going to sleep, and on through the first four stages of sleep. These stages can readily be identified on the EEG record by their characteristic wave form. However, during this time, there is no indication of eye movement. It is when stage one reappears, when dreaming begins, that rapid eye movements take place.

As soon as the EEG record shows dreaming taking place, the EEG monitor buzzes the stimulator. This is the stimulator's signal to go to work. The stimulator now concentrates, for one minute, at a picture suggestive of vertical or horizontal motion. He coincidentally moves his own eyes vertically or horizontally, according to the action portrayed in the stimulus picture. The stimulator is trying to influence the respondent to produce coincident eye movements during the minute of stimulus time.

In the next minute of time, the stimulator may concentrate on a blank piece of paper and keep his eyes still. During this time period, the stimulator is attempting to influence the respondent not to produce eye movements.

This procedure is done during each of the 3 to 5 dream periods that human beings experience during a night's sleep.

As in System A, the coincident response during the specific time of stimulus application is what is measured for later decoding. The rapid eye movements during a period of time can be decoded as a dot, and the lack of them can be decoded as a dash.

In experiments carried out to date with four subjects, results have been significant at the 0.001 or better probability level.

How Does It Work?

One unfortunate aspect of the investigations into Psychic Transmissions is that there has not yet evolved an acceptable explanation of how this transmission occurs. There seems to be wide acceptance of the concept of an energy transfer taking place. However, the type of energy being transferred, and the speed of this transfer has not been established. One theory is that the energy is a form of electro-magnetic energy, while another is that the energy is different from currently known forms. As to the speed of transmissions - there is a strong feeling that it occurs above the speed of light!

A discussion of these points is the subject of other papers. For two such papers, read Dean[15] and Osis[16].

CONCLUSIONS

The interest into the investigation of Psychic Transmission of Information has grown immensely in the last decade or so. Of particular importance is the fact that more physical scientists are now participating in this research. The field is now producing data from controlled, reproduceable experiments that point to the existence of a phenomenon, and to the potential practical application of it.

As more research is carried out, a theory of how the transmission takes place will be agreed upon, and more control and application will take place.

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CHANNEL CHARACTERISTICS OF E.S.P.

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ABSTRACT

Transmission over ESP channel appears to be uniquely related to distance. A literature survey of ESP experiments over distances from 100 yards to 7,500 miles indicated slower attenuation over distance than expected by inverse square law. Instead of 2, the exponent was found to be .4.

"Blind" experiments were conducted in which subjective factors (psychological noise) was either balanced or accounted for statistically. In two out of the three experiments where ESP was operative, statistically significant attenuation was found.

The ESP orientation system, (addressing), was tested in experiments by varying the size of the scanning area and information about the target location. ESP addressing appears to be based on acquaintance with persons rather than landmarks. The ESP channel was found to be subject of interference from psychological states of a bystander in the target area.

INTRODUCTION

At least two distinguishable subsystems are involved in ESP transmission: the external channel of information acquisition and transmission, and the internal processing within human organism[8,12]. The external channels of sensory perception are well known. Nearly all research on sensory perception is concerned with internal affairs: sensing and processing stimuli into perceptual responses. Concerning ESP the balance is tipped to the opposite side There is considerable knowledge on information processing while the external channel is largely unknown. This channel has been too hard to tackle. Only lately, development of complex research designs and high powered computer evaluation methods' has made the ESP channel accessable for effective experimental investigation.

Popular beliefs that the ESP channel is independent from space-time dimensions of the physical world[17] and therefore outside the reach of scientific methods has impeded severly progress on channel research. Fortunately the facts contradict such occult beliefs, eg., literature surveys find moderate attenuation of ESP scores over distance in space[8], and drastic reduction of frequency of spontaneous cases with distance in time[6]. Apart from western efforts, Russian researcher, I. M. Kogan of Popow Institute in Moscow, applied an information theory model to his experimental data and also found a decline of transmission over distance[4].

The real difficulty of channel research stems from dependency of extra sensory processes on psychological and physiological variables such as muscular relaxation, synchronous alpha rhythm of EEG, attitudes, beliefs, mood, interpersonal relationships, and such defense mechanisms as repression. Obviously such psychological and physiological noise can overshadow distance effects on the ESP channel[12,13,14,16]. Therefore, subjects personality traits, attitudes, cognitive processes, and moods must be ascertained and dealt with by appropriate statistical methods. It is essential that the subjects are kept "blind" as to their distance from ESP stimuli. No distance experiment so designed to test the ESP channel had been performed, therefore, we developed our own project consisting of five major experiments. This presentation will summarize our experiments exploring the following problems:

(a) Attenuation of ESP over distance
(b) ESP orientation for locating targets in unknown territory - addressing
(c) Interference of the channels of two persons

METHOD

Methods varied slightly from experiment to experiment the basic designs being as follow[12,13].

(1) A large group of subjects distributed widely over U.S.A. attempted to percieve by ESP stimuli exposed at various distances from their homes and recorded their responses.
(2) A hundred nature postcards of five different kinds were randomized and displayed face down in four columns. Subjects were familiar with the pictures but had to ascertain the order in which they were displayed.
(3) Distances varied from 1 to 10,000 miles, usually in four increments. Distances were measured from a large National Geographical Society globe.
(4) Subjects filled a questionnaire at each session describing attitudes, mood and cognitive processes at the time of testing. They also took personality tests.
(5) The moods of the experimenters staying with the stimuli were also ascertained.

EVALUATION

ESP effects were comprehensively measured on several dimensions as developed by statistician M. E. Turner[19]. ESP scores were evaluated in conjunction with large array of independent variables, e.g., distance, questionnaire and personality test data, and subjects' previous scoring[12,13]. Stepwise multiple regression analyses (SMRA) and canonical correlation analyses were used[12,13], which allowed us to unscramble the distance variable, at some extent from the noise of the psychological factors. Significance levels, unless otherwise indicated, refers to SMRA evaluations.

RESULTS

First we surveyed the experiments published in English in which distance was varied; the range was from 100 yards to 7,500 miles[8]. As stated before, in these early experiments subjective factors were not controlled. We found that the ESP results declined with increasing distance. Dr. Malcolm E. Turner, Jr., a statistician, devised a mathematical model to evaluate the distance effect in the survey data. The decline was found to be much slighter than that of known physical energies, which follow the inverse square law of energy expansion. The decline of ESP in the experiments surveyed, appeared to follow an inverse 2/5 law: the exponent in his formula was .4. It is important to keep in mind that the ESP measures are just information measures, not energy measures and therefore describe the channel indirectly.

First Blind Distance Experiment[12]

Fifty-four subjects located all over the U.S. attempted to discover by ESP the order in which the stimulus cards had been set out. The distance between subjects and stimuli varied from as little as one-third mile to 10,550 miles. ESP scores were evaluated in conjunction with twenty-eight other variables by the stepwise multiple regression method. This enabled us to assess the influence of distance on ESP apart from the effects of other factors which might mimic or obscure it. Three basic ESP measures were used, from each of the three were derived transformed variables for more detailed analyses, two of them showed a slight but significant attenuation over distance. Scores on one measure declined an average of .04 per 1,000 miles ($P = .02$): the decline for the other measure was 1.7 per 1,000 miles ($P = .05$)[12].

Second Blind Distance Experiment

An experimenter carried stimulus pictures around the world, randomized them and displayed according to schedule in New York, Paris, New Delhi and Sydney[13]. Again fifty-seven subjects participated from their homes in U.S.A. The first experiment was essentially replicated. The same ESP measure, which showed strongest decrement with distance again declined significantly with distance, $p = .002$. The decrement being of the magnitude of .7 ESP quotient units per 1,000 miles. Figure 1 gives the regression lines of the ESP quotients for the two experiments.

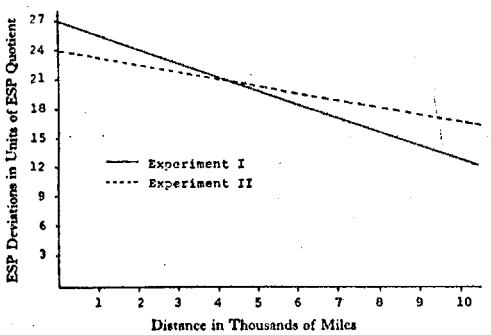

Fig. 1. Regression of the distance variable and the ESP quotient of forward displacements.

Declining of ESP over distance was also significant in three other measures, probabilities being .01; .05 and .02. Paradoxically one ESP measure rose with distance ($p = .05$), which was traced as being artifact of negative intercorrelations with variables declining with distance[13].

Our definitive test of the significance of these effects of distance in Experiment II used the method of canonical correlation. This takes the six basic ESP measures and incorporates them into six new, uncorrelated measures. Of these new canonical ESP variables, the first few have the strongest relationship to the non-ESP measures. The canonical correlation analysis was first performed using only the eighteen independent variables (excluding distance) which were measured once per session and thus could contaminate the distance results. The analysis was then performed again with distance added. The coefficient of canonical correlation, which measures the association between the canonical ESP variables and the independent variables, increased significantly for the second canonical ESP variable ($P = .002$) and the third canonical ESP variables ($P = .04$). Thus canonical correlation analyses confirmed the results of multiple regression: ESP transmission declined over distance[13].

The Third and Fourth Distance Experiments

The third experiment was conducted with similar designs as the second experiment, but the experimenter traveling with stimulus pictures was different[13]. We observed significant effects of psychological factors influencing ESP scores, such as extraversion, degree of absorbtion of attention in task, elation, relaxation, vitality, etc. No significant effects of distance on ESP were found.

ESP did not work in the fourth experiment. No indices of ESP were found in responses to five out of six stimulus stations. In absence of ESP transmission, of course, distance effects could not be evaluated. In two of the three experiments where ESP was operative transmission declined significantly with distance. Perfect replications are still uncommon in ESP research by the reason that factors facilitating or hindering transmission are not yet fully understood[18].

ESP Addressing: Ability to Locate Target Area

Reveiw of literature[1,2,3,5,8,10,15,20] gave clear cut evidence of the astonishing selectivity of ESP information system. It can find and select a person anywhere out of three billion inhibitants of the earth as well as selecting physical objects and events. Is ESP orientation based upon a kind of scanning for identifying landmarks? We radically varied the amount of information given to subject about the location of targets: naming the place, giving only direction of travel route, and providing no information at all[13]. The ESP transmission was not effected by information about the target area. Apparently the ESP Addressing system is not based upon the knowledge of the search territory[13,20]. The only link necessary for ESP addressing is acquaintance with the person in the target area. Such familiarity can be slight, second hand, or even by having some belongings of that person,[3,12,15]. In an experiment of M.C. March the acquaintance with target person was varied. ESP occurred only when appropriate acquaintance cues were given and failed to function in absence of appropriate cues[5]. So far we know ESP addressing system appears to be based on persons rather than landmarks[13].

Channel Interference Between Persons

Despite the astonishing precision of ESP orientation usually only small fraction of the desired information gets transmitted. Much of the information loss appears to occur in the channel,[9,13], and may be a kind of interference between two persons[12,13,16]. We performed a distance experiment designed to test the hypothesis of

channel interference between persons[9]. Subjects at their homes tried to identify pictures in the laboratory in the same display as in distance tests. Unknown to them a bystander was placed near the target area. The conditions precluded telepathic "sending" of the pictures -- it was a clairvoyance test. Moods of the bystander were ascertained on nine point scales. Channel interference would be indicated by correlations of the bystander's moods with subjects ESP scores. Correlations significant at .05 level were twice as many, and at .01 level four times as many as expected in a case with no association between the variables[9]. As predicted the moods of the bystander interfered with subjects ESP scores in this experiment.

Conclusions

ESP channel characteristics were tested in five experiments in which subjects were "blind" to the main variables. Slight but statisticly significant attenuation of ESP over distance was found, the decrements being somewhere between .7 to 1.7 ESP quotient units per 1,000 miles.

ESP addressing system was also tested. It did not depend on the size of scanning area or familiarity with landmarks, but was related to acquaintance with a person in the target area, however, slight or second hand the acquaintance.

Channel interference between subjects at distance and a bystander in target area was indicated by correlations of subjects scores and the moods of the bystander.

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